



Digital Competencies of School Administrators in Primary Schools: A Qualitative Study

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Abstract

The researchers designed this research aiming to explore the digital competencies of school administrators in primary schools using in-depth interviews. A total of nine informants consisting of three educational administrators with more than five years of working experience from the Educational Service Area Office, three primary school administrators with more than 10 years of working experience, and three experts in the field of digital competency development were selected using a purposive sampling technique. This research encompasses two phases. In the first phase, researchers conducted a documentary review of a total of five documents to identify the components of digital competencies of school administrators that have been investigated before. The results of the first phase revealed that there are five components of primary school administrators' digital competencies, namely digital leadership, creative problem-solving, digital technology literacy, digital collaboration, and adaptive for digital transformation. The identified components from the first phase were used to create an interview protocol comprised of 10 semi-structured interview questions for the second phase. In the second phase, in-depth interviews were employed to verify the identified components and followed by determining the related indicators of each component. The final results revealed that a total of 19 indicators were derived from the five components of digital competencies of primary school administrators as follows: (i) Digital leadership component consists of four indicators, namely being a role model in digital technology learning, developing digital skills for personnel, supporting to use of digital technology in operations, and strategic planning and vision setting; (ii) Creative problem-solving component comprises four indicators, namely the analysis identifies needs and problems, concept search for solving problems, problem-solving planning with digital tools, and application and assessment; (iii) Digital technology literacy component consists of four indicators, namely understanding digital technology, the ability to use digital tools, search and access to digital technology, and management and operations; (iv) Digital collaboration component comprises three indicators, namely building a collective agreement through digital technology, information sharing through digital technology, and collaboration through digital technology; (v) Adaptive for digital transformation consists of four indicators, namely flexibility and adaptability, creating digital management innovation, creating digital learning management innovation, and sustainable development in digital technology.

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Keywords Digital competencies, primary schools, qualitative study, school administrators.

DOI Number: 10.48047/NQ.2022.20.16.NQ880379 **NeuroQuantology**2022;20(16):3749-3757



INTRODUCTION

The digital competencies for school administrators are viewed as extensions in relationship with the ways that digital technologies impact and affect schools. School administrators should use these digital competencies to improve their practice, build capacity in their teachers, and drive student learning within their schools [1]. The digital competencies for school administrators seemed to be more important than before since the impacts of the coronavirus 2019 (COVID-19) pandemic. This is because the COVID-19 pandemic has affected the world's economies that have also stifled the education industry. [2] reported that there were around 1.5 billion students, 90 percent of the world's primary, secondary, and tertiary education students are unable to physically attend school.

School administrators are expected to possess sufficient digital competencies to face the challenges and impacts caused by COVID-19 revolutionary using technological solutions to support remote education and learning [2]. Consequently, digital transformation in the education sector is, however, not limited to post-COVID-19 online education and learning [2]. According to the current North Carolina standards, school administrators should model the following behaviors to their teachers and students [3].

Firstly, school administrators create and communicate a vision for digital teaching and learning in their schools, embedding it into the strategic plan for implementation and execution. Secondly, school administrators will be the "lead learners" in their schools, modeling appropriate instructional practices and ensuring content encompassing appropriate digital tools, resources, and pedagogies. Thirdly, school administrators leverage digital tools and resources to further develop a positive culture of learning that seeks continuous improvement among teachers and

students. Fourthly, school administrators develop a personal learning network and demonstrate a dedication to continued growth and excellence. Finally, school administrators engaged all stakeholders in the purpose and function of the school, leveraging multiple types and points of connection and communication to ensure the constant, effective flow of information and input [3].

[4] introduced the route to promote digital leadership in school. School administrators with sufficient digital competencies are able to encourage and develop effective digital leadership and create an environment where the great digital leaders will thrive. [4] identified three key steps for school organizations can take. Firstly, school administrators should define the change required and make it real. There are no one-size-fits-all solutions, so make the change relevant and real by identifying the key organizational and leadership gaps and defining the outcomes of closing those gaps. Secondly, school administrators build a support ecosystem. This means creating and nurturing a community around the school organization to support teachers to change. School administrators help teachers develop by building self-awareness and exposing them to new experiences. Finally, school administrators embrace discomfort to unlock the mindset. This means looking for ways to dispense with hierarchy for creating opportunities to take risks, experiment, and test ideas in iterative cycles.

MATERIALS AND METHODS

Research Informants

A purposive sampling technique was employed in which researchers rely on their own judgment when choosing the nine informants to participate in this research. This is because the researchers believed that these nine informants consisted of three educational administrators with more than 5 years of working experience from



the Educational Service Area Office, three primary school administrators with more than 10 years of working experience, and three experts in the field of digital competency development are a representative sample by using a sound judgment.

Since the researchers conducted in-depth interviews, the purposive sampling technique proves to be effective when only limited numbers of informants can serve as primary data sources due to the nature of the research design and aims of the research [5].

Research Design and Instruments

The researchers utilized in-depth interviews as a qualitative data collection method that allows for the collection of a large amount of information about the components and their indicators of digital competency for primary school administrators from the views of the nine informants. This research design is suitable for this research because researchers and informants have the freedom to explore additional points and change the direction of the process when necessary. This is because digital competencies are considered a new demand to primary school administrators when we were overwhelmed with the impacts of the COVID-19 pandemic. Therefore, an in-depth interview is an independent research design that can adopt multiple strategies according to the needs of the research [5].

A semi-structured interview protocol was developed based on the exploration of our research question. This research instrument is found suitable when gathering qualitative data in one-on-one interviews. The interview protocol not only provided consistency across the nine cycles of interviews but also allowed for flexibility of responses by the informants within their respective interviews.

Data Collection and Data Analysis

The nine potential informants were initially contacted by email. They were informed

that doctoral research was to be conducted and that aimed to gain an understanding into the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. The researchers explained to the informants that an interview of approximately one hour would be conducted at their convenience. Two weeks from the initial contact, follow-up procedures were required to contact the nine informants who had not replied to the initial contact. Such procedures included calling informants directly and sending another email. Finally, all nine informants responded with a willingness to participate after two times of follow-up procedures.

The researchers played back through the interview video, the researchers could follow along with the transcript and took notes on what is important. The research processes were improved because the researchers have time to pay attention not just to the words that were said, but to other nuances like facial expressions, and perhaps most importantly, what was left unsaid. This was followed by importing the qualitative data into NVivo software.

The researchers started to analyze the interview data using thematic analysis. Since the researchers worked with semi-structured interviews where the nine informants were asked the same set of questions, the researchers used heading styles to automatically organize the responses. The thematic analysis made sense of what the informants were saying, for example, their main points, some surprising perspectives that they did, and how their views or ideas differ as well as the points of commonality [6].

Research Process and Preliminary Study

A documentary review was employed to analyze a total of five documents that contain information about concepts, theories, and previous research reports regarding the digital competencies of school administrators. The researchers



accumulated these documents mainly aimed to review the related components that have been investigated previously. The results of this preliminary study were used to create the interview protocol for the nine informants in order to further explore the related indicators derived from the identified components. Figure 1 shows the research process.

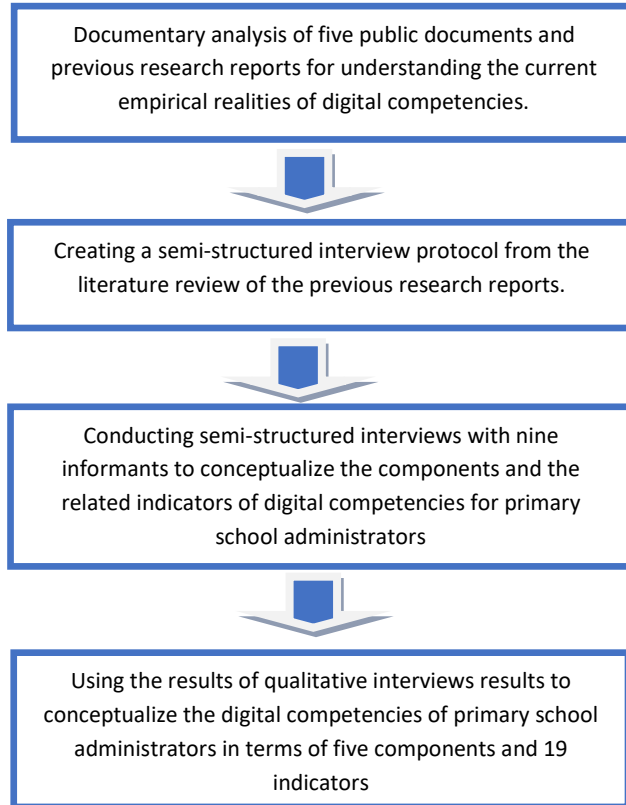


Figure 1. Research process

The researchers explored five documents that had been investigated from 2017 to 2020. Table 1 shows the five recent social research scholars' investigations of the digital competencies of school administrators.

Table 1. Documents used in documentary reviews to identify components of digital competencies for school administrators

No.	Name of Scholars	Year of Publication
1.	European Commission	2020
2.	Kelentric et al (2017)	2017
3.	Redecker and Punie (2017)	2017
4.	Office of National Digital Economy and Society Commission	2019
5.	Office of the Civil Service Commission	2017

RESULTS

The results of this research are presented in accordance with the conceptualization in terms of digital competencies for primary school administrators in achieving the research aim. The main aim of this research was to identify the key indicators of digital competencies for primary school administrators through in-depth interviews with nine informants. The preliminary results from the five documentary reviews revealed that there are five components that have been investigated before, namely digital leadership, creative problem-solving, digital technology literacy, digital collaboration, and adaptive for digital transformation.

The results from the nine informants confirmed the five components from the preliminary study are appropriate components of digital competencies for primary school administrators. Furthermore, the interview results revealed that there are five components and 19 indicators of digital competencies for primary school administrators.

Digital Leadership Component

The results revealed that the digital leadership of primary school administrators should be the role of current architectural practice and design. The informants recommended six key elements, namely impact, media, research by design,



integrative knowledge, digital domains, and leadership itself. These elements should be seen as a start of further investigation on skills, competencies related to digital leadership, and how primary school administrators understand these skills in practice. There are four indicators that can be derived from the digital learning component as follows:

- Being a role model in digital technology learning
- Developing digital skills for personnel
- Supporting to use of digital technology in operations.
- Strategic planning and vision setting

Informant 1 added that digital leaders are comfortable with ambiguity, as both the internal and external school operation conditions rapidly change. They engage and persuade their teachers in the change vision and cultivate new ways of thinking and working to support the process.

Informant 2 mentioned that digital leaders engage their teachers to change again and again by deploying strong situational and emotional awareness to anticipate and address school outcomes and interpersonal challenges, powered by agile thinking.

Informant 5 stated that some school administrators are 'born digital' leaders. However, school administrators need to consider cultivating this mindset within their teachers. It is the same mindset displayed by great leaders of innovation, agile leaders, and leaders who leverage diversity through inclusion.

Informant 6 agreed that once he saw these school administrators with digital leadership abilities as a "nice to have", the digital imperative has established our country to invest in developing this type of leader, the so-called digital leader.

Informant 7 suggested that digital leadership has and will continue to have a very positive impact on teaching, learning,

and assessment. The digital leadership initiative values input from management, teachers, students, and parents, which makes sure that everyone in the school community is supported.

Creative Problem-solving Component

The results indicated that a strong digital leader must have the capacity and skills to anticipate, identify, solve, prevent, and learn from problems that occur in the work environment. Creative problem-solving skills require positive processes that incorporate strong communication skills, respect for all parties involved, and innovative approaches. When problems are viewed as "opportunities," the benefits for both leaders and teachers can be highly positive. There are four indicators that can be derived from the creative problem-solving component as follows:

- The analysis identifies needs and problems
- Concept search for solving problems
- Problem-solving planning with digital tools
- Application and Assessment

Informant 3 highlighted that school administrators with creative problem-solving competency can either react to problems and the resulting change or look ahead

and visualize the future with creative problem-solving.

Informant 4 added that school administrators will only consider effective leaders unless they can anticipate change and learn how to facilitate and manage it.

Informant 7 emphasized that a school administrator does not have to wait until problems come to him/her. Good leaders know to seek solutions before the problems land on the doorstep.

Informant 8 mentioned that school administrators can, and must, regain their lost curiosity. Learn to see again with eyes undimmed by precedent. When school administrators allow their assumptions and



value judgments to get in the way, they stifle their own creativity and find themselves thinking predictable thoughts.

Digital Technology Literacy Component

Generally, the digital technology literacy component is defined by the informants as the ability to use, comprehend, manage, and analyze technology safely, effectively, and responsibly. This literacy includes using technology to evaluate, create, and integrate information. However, the majority of informants viewed technology literacy as not limited to just computers and the Internet. According to informants, digital technology literacy can be applied to any technological device. The definition of technology is any device, system, or methodology created to solve a problem or help carry out a task. There are four indicators that can be derived from the digital technology literacy component as follows:

- Understanding digital technology
- The ability to use digital tools
- Search and access to digital technology
- Management and operations

Informant 9 viewed that technological digital literacy involves school administrators' proficiency in using digital devices such as smartphones, laptops, and tablets to access the Internet to discover, create, review, evaluate, and use information via the different digital platforms.

Informant 8 noted that many definitions of technological digital literacy are fluid, changing, and evolving. But every school administrator in current condition needs to possess this technological digital literacy.

Informant 1 defined digital technology literacy as the ability to use digital technology, networks, and communication tools to find, evaluate, and create information that school administrators should possess this competency.

Informant 5 said that technology plays an increasing role in our lives, therefore school

administrators must make sure that they are navigating technology in a manner that helps the school progress rather than hinders us. To my opinion, digital technology literacy shows us especially those school administrators how to get the most out of our technology while avoiding pitfalls.

Digital Collaboration Component

All the nine informants reached the consensus that digital collaboration is an important component for school administrators to possess. They defined digital collaboration as a collaborative and innovative team of teachers and special needs assistants working together to assist in the integration of the use of digital technology for teaching, learning, and assessment. Therefore, school administrators are being a mentor for a cohort of teachers both in small groups and on an individual basis. School administrators check in regularly with their teacher groups and share effective practice, which aims to support and enhance the quality of students learning experiences. In short, digital collaboration encourages teachers to share ideas, cross-curricular resources, and strategies. There are three indicators that can be derived from the digital collaboration component as follows:

- Building a collective agreement through digital technology
- Information sharing through digital technology
- Collaboration through digital technology

Informant 2 shared her experience regarding digital collaboration. Each digital leader is responsible for helping a small group of colleagues to make sure that everyone has a support system for any digital problem or query they may have.

Informant 3 said that digital collaboration means that school administrators can use a digital platform to meet on a regular basis to share best practices.



Informant 9 stated that school administrators can use a platform such as Microsoft teams to create a team with their digital leader group allows easy communication and sharing of tips and advice.

Informant 4 mentioned that school administrators can share demonstration videos with their colleagues or help with any problems encountered in digital collaboration.

Informant 8 said digital collaboration ensures that nobody is left behind on their digital journey. Digital collaboration and innovation among teachers, transforming teaching and learning, and inspiring lifelong learning are very important indicators.

Adaptive for Digital Transformation Component

All the informants agreed that the adaptive for digital transformation component involves improving the core business processes of a school to effectively fulfill students' and their parents' expectations through data and technology leveraging. In short, digital transformation can enhance the student experience in three ways as follows: (i) Enabling students to enter through the mobile app or web application; (ii) Providing a broad range of choices for online learning; (iii) Using technology to track the progress of students and enforce intervention protocols, and (iv) enabling online class organization.

There are four indicators that can be derived from the adaptive for digital transformation component as follows:

- Flexibility and Adaptability
- Creating digital management innovation
- Creating digital learning management innovation
- Sustainable development in digital technology

Informant 3 said that school administrators have to use classroom coaching technologies. For example, nearly all schools have adapted to digital education

approaches even though we are gradually starting teaching on-site.

Informant 5 highlighted that many schools have adapted to use admission technology. For example, the new age enrollment process would be accessible online for all, including parents, students, teachers, and administration. This is because the admission process has been operated up to the pandemic but now, we have adapted it already.

Informant 7 mentioned about online learning video integration is a solid example of adaptive for digital transformation. Initially, schools took technologies such as Zoom and Google Meet the conduct video conferences for classes.

Informant 9 said that school administrators also were present at student attendance and conducted examinations online. However, school organizations now can integrate their website with these resources and re-establish a seamless lesson experience on a digital basis through technology advances.

Results of Identification Digital Competencies of Primary School Administrators Components and Indicators

According to the investigation of the synthesis of concepts, theories, and previous research, the essential components and related indicators of digital competencies for primary school administrators which are identified from the interview results of the nine informants are presented in Table 2. This is coupled with the nine informants' recommendations with regard to fitting the 19 indicators of primary school administrators' digital competencies with the five essential components based on the Thai context. The majority of the nine informants suggested using the mean score of 3.00 or more as a cut-off point, and the coefficient of dispersion as 20% or less, in order to synthesize those components on the grounding of existing research on the digital competencies of school administrators.



Table 2. Summary of components and related indicators for digital competencies of primary school administrators

	Component	Indicator
D I G I T A L C O M P E T E N C I E S	Digital leadership	Being a role model in digital technology learning
		Developing digital skills for personnel
		Supporting to use of digital technology in operations.
		Strategic planning and vision setting
	Creative problem-solving	Flexibility and Adaptability
		Creating digital management innovation
		Creating digital learning management innovation
		Sustainable development in digital technology
	Digital technology literacy	Understanding digital technology
		The ability to use digital tools
		Search and access to digital technology
		Management and operations
	Digital collaboration	Building a collective agreement through digital technology
		Information sharing through digital technology
		Collaboration through digital technology
	Adaptive for digital transformation	Flexibility and Adaptability
		Creating digital management

		innovation
		Creating digital learning management innovation
		Sustainable development in digital technology

DISCUSSION

The COVID-19 pandemic has forced change in school administration, Education, that central pillar of civilization, was forced to go digital essentially overnight. The most visible aspect of this remote learning, with its evident adjustment such as everyone in the world now, can access the foremost expert on any subject but the cost is the loss of easy interaction. The pandemic seems to diminish soon, and most educational activities will return to schools. However, some of the new ways will be adopted, where they are useful. As a result, school administrators need to possess sufficient digital competencies to ensure that their schools will not lag in digital transformation.

The main results of this research contribute the five components and 19 related indicators to primary school administrators in developing their digital competencies. The primary school administrators can possess their digital competencies by cultivating these five components and 19 indicators, namely (i) Digital leadership component consists of four indicators, namely being a role model in digital technology learning, developing digital skills for personnel, supporting to use of digital technology in operations, and strategic planning and vision setting; (ii) Creative problem-solving component comprises four indicators, namely the analysis identifies needs and problems, concept search for solving problems, problem-solving planning with digital tools, and application and assessment; (iii) Digital technology literacy



component consists of four indicators, namely understanding digital technology, the ability to use digital tools, search and access to digital technology, and management and operations; (iv) Digital collaboration component comprises three indicators, namely building a collective agreement through digital technology, information sharing through digital technology, and collaboration through digital technology; (v) Adaptive for digital transformation consists of four indicators, namely flexibility and adaptability, creating digital management innovation, creating digital learning management innovation, and sustainable development in digital technology.

In conclusion, the COVID-19 global pandemic has significantly increased the digital transmission of knowledge, making the digital competencies of primary school administrators crucial for participation in education society, including lifelong learning and approachable educational opportunities. This is because digital technologies changed how knowledge and information are accessed, shared, and produced. By digitalizing the experience of learning, both students and teachers may improve their skills in order to create an active educational process. Digital transformation in education can be applied in many respects, from online learning to intelligent schooling, student assessments, customized learning experiences, and online examinations.

ACKNOWLEDGMENT

The authors gratefully acknowledge the use of service and facilities of the Faculty of Education, Khon Kaen University, Khon Kaen 40002, Thailand. The contents of this manuscript are derived from the first author's doctoral dissertation thus fulfilling the Ph.D. requirement of Khon Kaen University.

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